

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

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24. Nov. 2004

Keller & Partner AG

PCT

INVITATION TO RESTRICT OR
TO PAY ADDITIONAL FEES

(PCT Rule 66)

Date of mailing
(day/month/year)

22.11.2004

Applicant's or agent's file reference
RS/hr-16149

REPLY OR
PAYMENT DUE

within 1 month(s)
from the above date of mailing

International application No.
PCT/CH 03/00231

International filing date (day/month/year)
09.04.2003

Priority date (day/month/year)
01.10.2002

International Patent Classification (IPC) or both national classification and IPC
H01F27/28

Applicant
DELTA ENERGY SYSTEMS (SWITZERLAND) AG et al.

FRIST NOTIERT

22.12.04

1. This International Examining Authority

- (i) considers that **the international application does not comply with the requirements of unity of invention** (Rule 13.1, 13.2 and 13.3) for the reasons indicated in the Annex.
- (ii) therefore considers that there are **2 inventions** claimed in the international application as indicated in the Annex.
- (iii) recalls that claims relating to inventions in respect of which no international search report has been established need not be the subject of international preliminary examination (Rule 66.1 (e)).

2. Consequently the applicant is hereby **invited**, within the time limit indicated above, **to restrict the claims** as suggested under item 3, below, **or to pay** the amount indicated below:

EUR 1530,00

1

EUR 1530,00

Fee per additional invention

x

number of additional inventions

=

total amount of additional fees

The applicant is informed that, according to Rule 68.3 (c), **the payment of any additional fee may be made under protest**, i.e. a reasoned statement to the effect that the international application complies with the requirement of unity of invention or that the amount of the required additional fee is excessive.

- 3. **If the applicant opts to restrict the claims**, this Authority suggests the restriction possibilities indicated in the Annex, which in its opinion would be in compliance with the requirement of unity of invention.
- 4. **In the absence of any response** from the applicant, this Authority will establish the international preliminary examination report on those parts of the international application indicated in the Annex which, in the opinion of this Authority appear to relate to the main invention.

Name and mailing address of the international preliminary examining authority:



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**INVITATION TO RESTRICT
OR TO PAY ADDITIONAL FEES**

International application No. **PCT/CH 03/00231**

1. This Authority considers that there are 2 inventions covered by the claims indicated as follows:
 - I: Claims 1 - 17 and 22 - 25 (first group) directed to a coil form including a metal separating plate which forms or is provided as a winding of the second coil.
 - II: Claims 18 - 21 (second group) directed to a coil form including elements with means to fit elements together to form a coil body.
2. The reasons for which the inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT, are as follows:

The available prior art does not disclose or teach a feature relating to a coil portion including a recess for positioning the separating plate (see claim 13).

It thus follows that the above-mentioned feature provides a (not obvious) contribution over the prior art and can be considered as a special technical feature within the meaning of Rule 13.2 PCT. No common or corresponding feature is found in claims 18 - 22. In conclusion, the groups of claims 1 - 17, 22 - 25 (first group) and 18 - 22 (second group) are not linked by common or corresponding special technical features and define different inventions not linked by a single general inventive concept.

The application, hence does not meet the requirements of unity of invention as defined in Rules 13.1 and 13.2 PCT.

3. A set of claim including an independent claim (apparatus claim and/or method claim) comprising the above-mentioned special technical feature would be in compliance with the requirement of unity of invention.

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your ref.

Our File 16149
International Patent Application No. PCT/CH2003/000231; Delta Energy Systems
(Switzerland) AG,
Invitation to restrict or to pay additional fees

Dear Sirs,

1 New claims 1-20

In response to the Invitation to restrict or to pay additional fees of 22 November 2004 with respect to the international patent application in caption please find enclosed new claims 1-20 (replacement sheets 21-25). The international preliminary examination report shall be established on the basis of these new claims.

The most important amendments in the originally filed claims are:

- In claim 1, feature a) the term "a first coil and a second coil" has been replaced by the term "at least two coils" (this amendment is based on the description on page 3 line 9).
- In claim 1, the term "and having a coil area on its outer surface for holding a wire (16) that forms a part of a first coil" has been slightly amended and moved from feature b) to feature c).
- In claim 1, feature c) the term "a separating plate (3, 3.1) which surrounds" has been replaced by the term "at least two separating plates (3, 3.1) which surround" (this amendment is based on the description on page 5 line 4).
- In claim 1, feature c) the term "providing said coil area"

- In claim 1, the term "forms a winding of the second coil" in the the characterising part has been replaced by the term "forms a winding of another coil".
- In claim 1, the feature "the separating plates are spaced at a specific plate-distance" from original claim 4 has been inserted as feature e).
- In claim 1, the feature "where a ratio of the plate-distance to a diameter of the wire is between 1 and 2" from original claim 5 has been inserted as feature f).
- The feature "and the separating plates being equally spaced at a specific plate-distance" has been deleted from claim 4.
- The term "1 and 2, preferably between " has been deleted from claim 5.
- In original claim 22 (new claim 18), the term "a core (11.1, 11.2), a first coil and a second coil" has been replaced by the term "a core (11.1, 11.2) and at least two coils".
- In original claim 22 (new claim 18), the feature "where a part of the first coil (16) is provided by winding a wire in a coil area around an outer surface of the coil body" has been deleted.
- In original claim 22 (new claim 18), the feature "a coil area is provided by pushing at least two metallic separating plates (103) with an opening over the coil body and positioning the separating plates at a specific plate-distance" has been inserted.
- The features "by winding a wire in said coil area around an outer surface of the coil body thereby pressing the separating plates against a side support, where a part of a coil is provided by said wire and" have been inserted into original claim 22 (new claim 18). (This amendment is based on the description on page 18, line 17.)
- In original claim 22 (new claim 18), the term "a winding of the second coil is provided by pushing a metallic separating plate (3) with an opening over the coil body" has been replaced by the term "a winding of another coil is provided by a metallic separating plate (3)".
- A new claim 14 has been inserted (this new claim is based on the description on page 8 lines 17-20 and on page 19, lines 12-15).
- The claims 15, 18-21 and 24 have been deleted.
- Additionally, the claim numbers and the claim dependencies have been amended accordingly.

For the examiners convenience, a marked version of the new claims is enclosed, where additions compared with the previous claims are underlined and where deletions are crossed out. Each amendment is marked in the margin with a line.

2 Patentability

2.1 Novelty

The new claim 1 claims a coil form for forming an inductive element, having at least two separating plates that provide a coil area on the outer surface of the coil body for holding a wire that forms a part of a coil, where each separating plate forms a winding of a coil of the inductive element. The claim further includes the limitation that the separating plates are spaced at a specific plate distance the width of which being larger than the wire diameter but smaller than twice the wire diameter.

None of the cited references discloses a coil form or an inductive element with these features

The new claim 18 claims a corresponding method for forming an inductive element with a hollow coil body, a core and at least two coils, where coil areas on the surface of the coil body are provided by pushing separating plates over the coil body. The claim further includes the limitation that the separating plates are positioned at a specific plate-distance by winding a wire in coil area where the wire presses the separating plates against a side support.

Again, none of the cited references discloses a method for forming an inductive element with these features. Accordingly, claim 18 and therewith all depending claims 19-20 are new.

2.2 Inventive step

The independent claims 1 and 18 include several features that are not known from the cited references. It is for example not known from the cited references that the distance between two separating plates is chosen in dependency of the diameter of the wire used for the wire windings or to position the separating plates by pressing them against a side support (either a flange portion or a projection on the surface of the coil body) during the process of winding the wire within the winding chambers provided by the separating plates.

It therefore can not be obvious for a person skilled in the art to incorporate these features into a coil form or a method for forming a coil form as claimed.

Hence, claims 1 and 18 and therewith all depending claims 2-17 and 19-20 involve an inventive step.

Since all claims 1-20 are new and involve an inventive step, they are patentable.

3 Examination report

As the new claims fulfill all patentability requirements, a positive international preliminary examination report can be expected.

In the case the examiner requires further clarifications or does not agree with the above comments he is kindly requested to call back.

Yours faithfully,

Koller & Partner

Patentanwälte AG

Roman Stäbler

- Replacement sheets 21-25 (with and without marked amendments)
- Form of acknowledgement of receipt

New claims 1 – 20

1. A coil form (1, 1.1) for forming an inductive element with a core (11.1, 11.2), including
 - a) at least two coils,
 - 5 b) a hollow coil body (2) for insertion of the core, the coil body (2) being made of an electrically insulating material and
 - c) at least two separating plates (3, 3.1) which surround the outer surface of the coil body thereby providing at least one coil area (15, 15.1) on the outer surface of the coil body for holding a wire (16) that forms a part of a coil,
 - 10 characterised in that
 - d) each separating plate is made of metal, includes an opening (4) for pushing the separating plate over the coil body and a slit (5) for prohibiting short circuits and leakage currents within the separating plate, and in that the separating plate forms a winding of another coil (16);
 - 15 e) the separating plates are spaced at a specific plate-distance,
 - f) where a ratio of the plate-distance to a diameter of the wire is between 1 and 2.
2. A coil form according to claim 1, characterised in that the coil body (2) includes a coil portion (6) of a kind of a hollow cylinder for slipping over the separating plate (3) and a
20 flange portion (7) on an end region of the coil portion.
3. A coil form according to claim 2, characterised in that it includes two separating plates and in that the coil portion includes a second flange portion on a second end region of the coil portion, the flange portions forming a side support for the separating plates.

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4. A coil form according to claim 3, characterised in that it includes four separating plates and a projection (123) that surrounds the outer surface of the coil body (102), the projection forming a side support for two separating plates.

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5. A coil form according to claim 4, characterised in that a ratio of the plate-distance to a diameter of the wire is between 1.1 and 1.4.

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6. A coil form according to any of claims 1 to 5, characterised in that the coil portion (106) includes a recess (127) on an inner surface and an opening (126) in its outer surface in a region of said recess, where said wire (128) is fed from an outside of the coil portion to an inside of the coil portion through said recess and from the inside of the coil portion to the outer surface of the coil portion through said opening.

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7. A coil form according to any of claims 1 to 6, characterised in that said flange portion includes a plurality of holes, where a pin (125) is inserted into at least one hole, said pin being electrically conductively connectable to an end of one of the coils.

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8. A coil form according to any of claims 1 to 7, characterised in that two or more separating plates are electrically conductively connected to form a plurality of windings of the second coil.

9. A coil form according to any of claims 1 to 8, characterised in that a shape of the opening (4) of the separating plate substantially corresponds to a shape of the outer

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surface of the coil body and in that an internal diameter of the separating plate is smaller than an outer diameter of the coil body.

- 5 10. A coil form according to any of claims 1 to 9, characterised in that the coil body comprises at least two elements (20.1, 20.2) with means (21, 22) to fit the elements together to form the coil body.
- 10 11. A coil form according to claim 10, characterised in that the coil body comprises a first and a second element (20.1, 20.2) and in that the means to fit the elements together include a recess (21) on the first element and a corresponding projection (22) on the second element.
- 15 12. A coil form according to any of claims 10 to 11, characterised in that the coil portion is of a kind of a right cylinder, where the coil body is separated into two elements by a plane being perpendicular to a base plane of the right cylindrical coil portion.
- 20 13. A coil form according to claim 2, characterised in that the coil portion includes a recess (8) for positioning of the separating plate and in that the flange portion includes a plurality of terminals (9) where at least one terminal is electrically conductively connectable to an end of one of the at least two coils.
- 25 14. A coil form according to any of claims 1 to 13, characterised in that a single separating plate is replaced by a plate group (130) where each plate group includes two separating plates and an insulation plate (119) between the separating plates.

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- 5 15. An inductive element with a coil form according to any of claims 1 to 14, including a core (11.1, 11.2) inserted into the hollow coil body, a wire provided on the outer surface of the coil body forming a part of a first coil of the inductive element and a metallic separating plate that surrounds the outer surface of the coil body and forms a part of another coil of the inductive element.
- 10 16. An inductive element according to claim 15, characterised in that the core (11.1, 11.2) of the inductive element has a shape of two rectangular portions with a common edge (13), where the common edge is inserted into the hollow coil body and whereby the core preferably includes two E-shaped parts (11.1, 11.2).
- 15 17. An inductive element according to any of claims 15 to 16, characterised in that it includes at least two coil forms according to any of claims 1 to 13, where the core (11.1, 11.2) is inserted into the hollow coil body of each coil form.
- 20 18. Method for forming an inductive element with a hollow coil body (2), a core (11.1, 11.2) and at least two coils, characterised in that a coil area is provided by pushing at least two metallic separating plates (103) with an opening over the coil body and positioning the separating plates at a specific plate-distance by winding a wire in said coil area around an outer surface of the coil body thereby pressing the separating plates against a side support, where a part of a coil is provided by said wire and a winding of another coil is provided by a metallic separating plate (3).
- 25 19. Method according to claim 18, characterised in that said wire is fed from an outside of the coil body (102) to an inside of the coil body through a recess (127) on an inner surface of the coil body and from said recess to the outer surface of the coil body through an opening (126) in the coil body in a region of said recess.

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20. Method according to any one of claims 18 or 19, characterised in that a plurality of coil areas (124) provided by pushing a plurality of metallic separating plates over the coil body and spacing them equally at a specific plate-distance and in that a wire (128) is wound around the outer surface of the coil body in each coil area simultaneously.

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